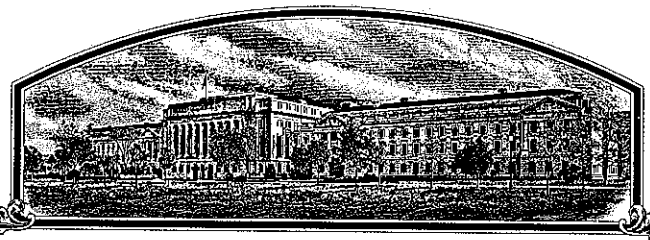

No. 9100202

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Illinois

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Howell'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 30th *day of* April *in the year of our Lord one thousand nine hundred and* ninety-three.

Attest:

Kenneth B. Evans

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
University of Illinois

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
IL 82-3298

3. VARIETY NAME
Howell

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
Illinois Agricultural Experiment Station
1301 W. Gregory
211 Mumford Hall
University of Illinois
Urbana, IL 61801

5. PHONE *(Include area code)*
(217) 333-0240

FOR OFFICIAL USE ONLY

PVPO NUMBER
9100202

FILING
Date: June 20, 1991
Time: ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $ 2150.00
Date: June 20, 1991
Certificate Fee: $ 250.00
Date: Apr. 9, 1993

6. GENUS AND SPECIES NAME
Triticum aestivum L.

7. FAMILY NAME *(Botanical)*
Graminae

8. CROP KIND NAME *(Common Name)*
Soft Red Winter Wheat

9. DATE OF DETERMINATION
8/88

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
University of Illinois

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
D. A. Holt, Director
Agricultural Experiment Station
University of Illinois
211 Mumford Hall, 1301 West Gregory Dr., Urbana, IL 61801 PHONE *(Include area code)*: 217-333-0240

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 5/29/91
g. ☒ Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☒ YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____.)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
D A Holt	Director	6/10/91
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

1

Exhibit A

Origin and Breeding History of Howell

1) Howell (previously designated IL 82-3298) was developed by the Illinois Agricultural Experiment Station. The parents of Howell are: McNair 48-23 / IL 70-2225 // CI 13855 /3/ Arthur / Blueboy // TN 1571. Howell was first selected in 1982 as a headrow from a single F_4 plant. Howell was repurified in 1986 and 1988. Heads selected from Howell were grown in headrows in 1986, and headrows with variant types in them were removed. The remaining headrows were harvested in bulk. Heads were again selected in 1987, and 200 headrows were grown in 1988. Most of the rows were uniform and similar to each other. Any rows that differed were removed. Seed from the remaining rows was bulked.

2) Breeder seed of Howell was produced from the progeny of the bulked headrows grown in 1988. The seed was increased in 1989. The field was inspected frequently and variants rogued. This breeder seed (F_{13}) was increased in 1990 and variants again rogued. Foundation seed is in production in 1991 from this repurified breeder seed.

3) Howell has been stable and true-breeding; however, up to 0.5 % other types, including tall variants which are 6 to 12 cm taller than most plants in the variety, are allowed. Except for the difference in height, the tall variants are very similar in appearance to other plants in the variety; however, some variants may not be awned.

4) The performance of Howell was tested in breeding nursery trials in Illinois from 1985 - 1990, in variety testing trials in Illinois from 1985 - 1990, and for three years in the Uniform Eastern Soft Red Winter Wheat Nursery from 1986 - 1988.

5) Howell is high-yielding, has excellent winter hardiness, and has very high test weight. Howell was selected in comparison to popular varieties in Illinois, including Caldwell and Cardinal.

Exhibit B

Novelty Statement

Howell is an awned white-chaffed soft red winter wheat cultivar. It is similar to Cardinal in maturity and height and yields equal to or better than Cardinal in Illinois. It is easily distinguished from Cardinal because Howell is awned and Cardinal is apically awnletted. Howell stands well. Howell has excellent winter hardiness and excellent test weight. Test weight of Howell has averaged 2.5 pounds per bushel more than Cardinal in 18 tests in Illinois.

Howell can be distinguished from many soft red winter wheat varieties because it is awned. The awned variety, Dynasty, can be distinguished from Howell by comparing height and maturity. Dynasty is shorter and earlier than Howell.

Howell is moderately resistant to soil borne wheat mosaic virus, barley yellow dwarf virus, and stem rust (*Puccinia graminis,* Pers. f. sp. *tritici* Eriks. & Henn.) Howell is moderately susceptible to leaf rust (*Puccinia recondita,* Rob. ex Desm. f. sp. *tritici*) and powdery mildew (*Erysiphe graminis,* DC. f. sp. *tritici* E. Marchal). Howell is susceptible to biotypes B and D of the Hessian fly (*Mayetiola destructor,* Say). It has not been evaluated with other biotypes of Hessian fly.

'Howell' is most similar to 'Cardinal'.

AAA (per letter)
10 Mar
1993

University of Illinois
at Urbana-Champaign

Department of Agronomy
W-203 Turner Hall
1102 South Goodwin Avenue
Urbana, IL 61801-4798

217 333-3420
217 333-9817 *fax*

9100202

February 25, 1993

Alan A. Atchley
Plant Variety Protection Office
NAL Bldg., Room 500
10301 Baltimore Blvd.
Beltsville, MD 20705-2351

Dear Alan:

As one of the breeders responsible for the development and description of 'Howell' soft red winter wheat, I am responding to your questions to Dr. Holt regarding Howell.

Howell has been stable and true-breeding over all (F_5 to F_{13}) generations since the original selection in the F_4. The original seed increase of Howell contained some tall variants. The repurifications in 1986 and 1988 were carried out to reduce the frequency of these tall variants and make the variety more homogeneous for height. The selections in 1986 and 1988 were made based on plant height. Headrows that were taller or shorter than the majority of the headrows were removed, and seed of the remaining headrows was bulked to provide seed to increase.

In reference to the novelty statement, Howell is most similar to the variety Cardinal. I did not make that clear in the original novelty statement. Howell is distinguished from Cardinal because Cardinal is apically awnletted, but Howell is awned. Also, Howell can also be distinguished from Cardinal on the basis of coleoptile color (Exhibit C, item 13). Cardinal has a purple coleoptile, and Howell has a white coleoptile.

modification of Exhibit B

The inconsistency related to the description of Howell's reaction to stem rust, leaf rust and powdery mildew is related to the Exhibit C form because the form provides only 2 classes (susceptible or resistant). I concur with you that the meaning of "susceptible", "moderately susceptible" and "moderately resistant" are not the same. I believe Howell should be classified as moderately resistant to stem rust and moderately susceptible to leaf rust and powdery mildew. I've included that information in the novelty statement, but it is probably more appropriate to have it included in Exhibit D, additional description of the variety. I consider these descriptions in the text to be more accurate than the information from Exhibit C.

4

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
University of Illinois

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Illinois Agricultural Experiment Station
1301 W. Gregory
211 Mumford Hall, University of Illinois, Urbana, IL 61801

FOR OFFICIAL USE ONLY
PVPO NUMBER 9100202

VARIETY NAME OR TEMPORARY DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [1] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[2][2][9] FIRST FLOWERING [2][3][4] LAST FLOWERING

4. MATURITY (50% Flowering):
[ ][ ] NO. OF DAYS *EARLIER* THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS
[0][5] NO. OF DAYS *LATER* THAN ..... [1] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (From soil level to top of head):
[1][0][7] CM. HIGH Corrected to 107 based on comparison varieties mentioned in Exh. B
SAA 13 Mar 1995
[0][3] CM. TALLER THAN ..... [1]
[ ][ ] CM. SHORTER THAN ..... [ ] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[0][4] NO. OF NODES (*Originating from node above ground*)
[1] Waxy bloom: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[0][3] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[1] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[1][3] MM. LEAF WIDTH (*First leaf below flag leaf*)
[2][2] CM. LEAF LENGTH (*First leaf below flag leaf*):

11. HEAD:

[2] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER *(Specify)* ______

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER *(Specify)*: ______

[8.6] CM. LENGTH

[0 9] MM. WIDTH

12. GLUMES AT MATURITY:

[1] Length: 1 = SHORT *(CA. 7 mm.)* 2 = MEDIUM *(CA. 8 mm.)* 3 = LONG *(CA. 9 mm.)*

[3] Width: 1 = NARROW *(CA. 3 mm.)* 2 = MEDIUM *(CA. 3.5 mm.)* 3 = WIDE *(CA. 4 mm.)*

[2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[2] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[ ] Phenol reaction *(See instructions)*: 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER *(Specify)*

[6.3] MM. LENGTH

[3.7] MM. WIDTH

[~~3.7~~] GM. PER 1000 SEEDS Deleted as erroneous 13 Mar 1995 from database; ~~[illegible]~~

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[1] STEM RUST *(Races)* ______

[1] LEAF RUST *(Races)* ______

[0] STRIPE RUST *(Races)* ______

[ ] LOOSE SMUT

[1] POWDERY MILDEW

[0] BUNT

[ ] OTHER *(Specify)* ______

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[0] SAWFLY

[?] APHID *(Bydv.)*

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[ ] OTHER *(Specify)* ______

HESSIAN FLY RACES: [0] GP [0] A [1] B [0] C [1] D [0] E [0] F [0] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Cardinal	Seed size	Cardinal
Leaf size	Cardinal	Seed shape	Cardinal
Leaf color	Caldwell	Coleoptile elongation	Caldwell
Leaf carriage	Caldwell	Seedling pigmentation	Caldwell

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. *(See attachment.)*

Exhibit D

Additional Description of the Variety

Coleoptiles of Howell seedlings are white. Stem anthocyanin is absent in Howell. Auricles and ligules and the last rachis internode are glabrous. The heads are fusiform in shape and classified as mid-dense with about 4.5 cm for 10 rachis internodes. Cheeks of the kernels are rounded and the crease is narrow and shallow. The heads, which measure approximately 9 cm in length and 9 mm in width, are primarily erect at maturity. Howell is awned and white-chaffed.

Milling and Baking Quality Evaluation of Howell

(Data from USDA Soft Wheat Quality Laboratory, Wooster, Ohio)

Howell has exhibited good to excellent milling quality (Tables 1-5). For example, flour yield and break flour yield for Howell have been high. The high test weight of Howell also contributes to good milling quality.

Although the baking quality of Howell has not been as good as the milling quality, the baking quality of Howell is equivalent to some varieties that are currently in commercial production (Tables 1-5). For example, the 1989 AWRC for Howell was similar to Tyler and Clark, and the 1989 cookie diameter was similar to Auburn and Clark (Table 5). Howell generally has slightly higher protein percentage than some soft red winter wheat varieties. It has also had slightly lower cookie diameter and cake volume than some varieties. Nevertheless, because of the diverse end uses for soft red winter wheat, the baking quality of Howell should be acceptable to the industry.

Table 1. Wheat milling and baking quality data from samples grown in Illinois in 1985.

SAMPLE NO		ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	ADJ. YIELD	PROTEIN	AWRC	SOFT-NESS EQUIV.	ALLIS EQUIVALENTS ESI	BR FL	EXT.
****		STANDARD - Scotty	100 A	100 A	100 A	72.8	10.9	52.5	48.0	12	27.6	75.5
****		BENCHMARK	104.5 A	106.5 A	104.5 A	74.1	8.3	52.4	57.7	10.2	35.4	76.8
5535	1	MOW 10950	99.4 B	98.9 B	98.9 B	72.6	10.5	53.8	52.1	12.3	30.9	75.3
5536	2	MOW 10435	97.4 B	93.1 C	93.1 C	72.0	11	54.6	51.4	13.1	30.3	74.7
5537	3	MOW 11365	98.6 B	101.6 A	98.6 B	72.4	11.1	52.9	55.3	12.6	33.5	75.1
5538	4	MOW 11165	97 B	86.6 D	86.6 D	71.9*	12.2*	55 *	50.3	13.2	29.5	74.6
5539	5	MOW 11081	95.7 B	89.2 D	89.2 D	71.5*	11	55.7*	53.4	13.8	32	74.2
5540	6	IL 81-3210	99.1 B	98 B	98 B	72.5	11.1	53.6	52.2	12.4	31	75.2
5541	7	IL 81-3696	95.6 B	98.7 B	95.6 B	71.5*	12.6*	52.5	52.5	13.8	31.2	74.2
5542	8	IL 81-3786	98.7 B	95.9 B	95.9 B	72.4	12.2*	53.4	53.4	12.5	31.9	75.1
5543	9	IL 81-2766	103.7 A	91 C	91 C	73.9	11.7	54.2	49.3	10.5	28.7	76.5
5544	10	IL 82-3298	96.2 B	86.1 D	86.1 D	71.7*	11	55.6*	48.6	13.6	28.1	74.4
5545	11	IN 69195C9-4-1-1-38-	97.3 B	96.3 B	96.3 B	72.0*	11.5	53.5	51.0	13.1	30	74.7
5546	12	IN 76148A2-10-4-3	96 B	101.4 A	96 B	71.6*	10.4	53.4	59.2	13.7	36.6	74.3
5547	13	IN 77249RC1-133-3	92.5 C	96.7 B	92.5 C	70.6*	11.2	53.9	54.7	15.1	33	73.3
5548	14	IN 78434RB1-10	102.9 A	103.7 A	102.9 A	73.7	10.2	53	55.9	10.8	34	76.3
5549	15	IN 79424M1-20	98.7 B	104.5 A	98.7 B	72.4	10.9	52.4	55.3	12.6	33.5	75.1
5550	16	OH 257	92 C	85.5 D	85.5 D	70.4*	11	55.6*	47.9	15.3	27.5	73.1
5551	17	OH 262	97.2 B	104.5 A	97.2 B	72.0*	10.9	52.4	58.2	13.2	35.8	74.7
5552	18	OH 265	97.7 B	107.3 A	97.7 B	72.1	11	51.7	59.1	13	36.5	74.8
5553	19	OH 285	95 B	92.1 C	92.1 C	71.3*	12.7*	53.8	51.9	14.1	30.8	74
5554	20	OH 286	97.3 B	109.5 A	97.3 B	72.0*	10.4	51.1	61.3	13.1	38.3	74.7
5555	21	HART	95 B	98.2 B	95 B	71.3*	11	53.7	54.8	14.1	33.1	74
5556	22	SCOTTY	100 A	100 A	100 A	72.8	10.9	52.5	48.0	12	27.6	75.5
5557	23	AUBURN	96 B	100.3 A	96 B	71.6*	11	53.2	52.3	13.6	31.1	74.3
5558	24	TITAN	90 C	96.9 B	90 C	69.8*	11	54	53.0	16.1	31.7	72.6
5559	25	ABE	97.4 B	92.4 C	92.4 C	72.0	12.2*	53.9	51.2	13.1	30.2	74.7

1986 CROP

Table 2. Wheat milling and baking quality data from 1986 Uniform Eastern Soft Red Winter Wheat Nursery samples.

UNIFORM EASTERN RED NURSERY
STANDARD = 86302, KNOX 62

9100202

WHEAT AND MILLING DATA

LAB NO.	ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	TEST WT.	BREAK FLOUR YIELD	ST.GR. FLOUR YIELD	RED. PASSES	FRIABILITY	E.S.I.	MILLABILITY
***	STANDARD – Knox 62	100 A	100 A	100 A	59.6	33.7	75.2	7	27.6	12.1	98.1
***	BENCHMARK	112 A	110.6A	110.6A	61.6	35.6	76.3	7	28	10.4	114.1
301 1	TRUMBULL	98.4 B	84.1 E	84.1 E	59.8	30 Q	76.1	8	27.3	11.9	97.4
302 2	KNOX 62	100 A	100 A	100 A	59.6	33.7	75.2	7	27.6	12.1	98.1
303 3	OASIS	103.8A	95.2 B	95.2 B	61.1	29.5Q	75.8	7	29	11.7	104.8
304 4	MD 72004	105.6A	102.8A	102.8A	60.5	31.1Q	76	7	28.8	10.8	107.3
305 2	9021L	96.3 B	95 B	95 B	58.9*	30.4Q	74.4	7	28	12	94.8
306 6	IN 76788G2-5-4-7	108.3A	103.3A	103.3A	60.8	33.4	76.3	7	29.2	10.6	109.9
307 7	MOW 10501	101.3A	101.4A	101.3A	61	32.7	75.8	7	28.2	11.7	99.3
308 8	IN 77249RC1-133-2	100.7A	100.8A	100.7A	60.3	32.3	75.6	7	28	11.9	99.3
309 9	ILL 81-3737	105.5A	94.9 C	94.9 C	60.8	29.2Q	76.6	7	28.2	10.8	107.8
310 10	MOW 11138	99.2 B	103 A	99.2 B	59.1	30.5Q	75.9	7	29.2	11.6	99
311 11	MD 55-220-76	105.5A	101.5A	101.5A	61.2	33.2	76.1	7	29	10.5	105.4
312 12	NA SW78-111	96.6 B	95 B	95 B	61.4	30 Q	75.8	7	27 *	11.5	93.2
313 13	ILL 79-1385	102.7A	98.2 B	98.2 B	59.9	29.5Q	77.3	7	26.4	11.3	104.3
314 14	NA SW76-180	102.7A	99.4 B	99.4 B	59.9	33.1	75.5	7	28.5	11.1	102.3
315 15	PS 840026	97.7 B	95.1 B	95.1 B	59.9	30.5Q	75.3	7	27.8	12.6	95.9
316 16	COKER 85-42	105.8A	100 A	100 A	60.5	37	75.7	7	29.9	11.3	104.4
317 17	COKER 83-23 (P9323)	112.5A	105.1A	105.1A	59.7	33.9	77.3	7	30	9.5	117.2
318 18	MD 55-217-63	106.8A	99.2 B	99.2 B	60.1	31.5Q	76.3	7	28.8	10.4	109.3
319 19	KY 83-60	108.1A	96.6 B	96.6 B	60.5	27.1Q	77.4	7	29.8	10	113.3
320 20	COKER 84-33	101.1A	90.7 C	90.7 C	61	29.3Q	75.4	7	29.1	11.5	100.7
321 21	COKER 82-28	100.3A	97 B	97 B	61.1	32.1	75.7	7	28.4	11.6	97.9
322 22	OH 257	99 B	93.7 C	93.7 C	59.8	28.8Q	75.3	7	27.9	11.5	99
323 23	OH 265	104.6A	109.5A	104.6A	60	37.4	76	7	28.9	11.3	102.8
324 24	OH 285	114 A	103.2A	103.2A	60.2	29.8Q	77.4	7	29.7	8.7	123.3
325 25	IL 82-3298	102.8A	94.8 C	94.8 C	61.4	30.6Q	76	7	27.5	11.3	102.6
326 26	IL 82-2986	111.8A	94.8 C	94.8 C	61.4	29.2Q	77.2	7	28.9	10	117.2
327 27	X 1349-10	108.8A	109.2A	108.8A	60.6	37.1	76.4	7	29	10.9	108.9
328 28	NA SW76-261	97 B	90.9 C	90.9 C	58.9*	31.5Q	75.7	7	27.6	11.1	95.4
329 29	AT 42263-8	105.4A	104.6A	104.6A	59.8	35.9	75.3	7	28.5	11.8	105
330 30	AT 74107-F11-4	106.8A	101.3A	101.3A	59.9	30.4Q	76.8	7	28.8	10.8	110.1
331 31	AGC B8 (TRIO)	105.4A	105.2A	105.2A	59.5	36.6	75.8	7	28.1	11.4	105
332 32	AGC B9	100.4A	96.3 B	96.3 B	59.5	34.1	75	7	27.4	12.1	98.6

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1986 CROP

Table 2. continued.

UNIFORM EASTERN RED NURSERY
STANDARD = 86302, KNOX 62

9100202

LAB NO.	STRAIGHT-GRADE FLOUR PROT. %	ASH %	MICRO AWRC %	COOKIE DIAM. CM.	TOP GRAIN	CAKE PATENT FLOUR PROT. %	ASH %	INIT PH	FINAL PH	CHLORINE RESPONSE PH/ML/G	OPT. LIQUID LEVEL	CAKE VOLUME ML.	CAKE SCORE
***	10.9	.39	53	17.52	6	9.8	.28	5.71	4.82	2.827	130	1080	80
***	8.9	.35	51.3	18.35	7	7.65	.27	5.68	4.84	2.83	130	1048	87
301	11.5	.41	53.9	17.27*	6	10.3	.3	5.71	4.82	4.571	130	1001 @	82
302	10.9	.39	53	17.52	6	9.8	.28	5.71	4.82	2.827	130	1080	80
303	11.5	.39	55.2*	17.39	6	10.3	.28	5.77	4.81	2.678	130	1079	82
304	10.1	.39	52	17.5	6	9.07	.28	5.75	4.82	2.864	130	1066	84
305	10.3	.4	53.3	17.3	5	9.44	.27	5.73	4.81	2.841	120	1060	80
306	10.3	.39	53.5	17.81	6	9.24	.25	5.79	4.84	3.017	120	1071	80
307	10.1	.41	52.8	17.76	7	9.13	.3	5.83	4.8	2.618*	130	1041 *	84
308	10.2	.4	53.8	17.34	6	9.11	.29	5.72	4.84	2.718	120	1095	80
309	10.5	.39	54.1	17.3	7	9.4	.3	5.74	4.76	2.838	120	1065	80
310	10.7	.43*	53.2	17.58	6	9.43	.3	5.7	4.77	2.7	130	1084	82
311	10.5	.41	51.5	17.69	7	9.49	.26	5.83	4.76	2.973	130	1044 *	84
312	11	.43*	51.9	17.43	6	9.88	.3	5.74	4.78	2.698	120	1039 *	82
313	10.7	.42*	52.7	17.48	6	9.27	.29	5.83	4.78	2.782	130	1045	84
314	9.65	.4	51.2	17.62	6	8.8	.28	5.75	4.83	2.918	120	1039 *	80
315	10.6	.4	53.1	17.24*	7	9.48	.29	5.78	4.77	2.745	120	1065	80
316	9.58	.41	56.8@	17.45	7	8.48	.29	5.77	4.84	2.844	120	1110	78
317	10.7	.39	51.2	17.71	5	9.66	.26	5.78	4.84	2.91	130	1076	82
318	10.4	.39	51	17.54	7	9.32	.28	5.79	4.82	2.592*	120	1049	80
319	10.9	.41	52.1	17.37	6	9.72	.28	5.75	4.79	2.645	130	1054	82
320	10.7	.41	49.7	17.08*	7	9.66	.28	5.87	4.78	2.59 *	130	1024 *	84
321	10.6	.42*	52.1	17.54	4	9.86	.31	5.83	4.8	2.774	120	1051	80
322	10.6	.4	53.5	17.43	6	9.17	.26	5.88	4.76	3.231	120	1029 *	82
323	9.82	.41	52.5	18	7	8.67	.27	5.73	4.79	3.063	120	1086	80
324	10.4	.37	49.3	17.98	6	9.58	.27	5.77	4.83	2.985	120	1037 *	82
325	9.82	.39	53.3	17.38	7	8.8	.28	5.91	4.82	3.366	130	1019 *	88
326	11.1	.37	51.4	17.65	6	9.96	.27	5.78	4.8	3.008	120	1022 *	80
327	9.42	.39	54.5	17.84	6	8.51	.3	5.78	4.83	3.071	120	1089	88
328	9.88	.43*	52.1	17.07*	5	8.95	.35	5.8	4.8	2.789	130	1015 *	86
329	9.82	.37	53	17.65	6	8.85	.26	5.79	4.83	3.304	120	1080	82
330	10.3	.39	51.8	17.49	6	9.25	.28	5.83	4.83	3.124	120	1065	82
331	9.57	.38	55.4*	17.56	7	8.57	.29	5.78	4.83	3.291	120	1106	84
332	10.5	.38	55.1*	17.18*	5	9.43	.27	5.75	4.82	2.987	120	1088	82

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Table 3. Wheat milling and baking quality data from 1987 Uniform Eastern Soft Red Winter Wheat Nursery samples.

9100202

1987 CROP
UNIFORM EASTERN RED NURSERY

STANDARD = 302, KNOX 62

WHEAT AND MILLING DATA

LAB NO.	ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	TEST WT.	BREAK FLOUR YIELD	ST. GR. FLOUR YIELD	RED PASSES	FRIABILITY	E.S.I.	MILLABILITY
***	STANDARD - Knox 62	100 A	100 A	100 A	62	31.5	75.9	8	27	12	107.9
***	BENCHMARK	101.3A	114.2A	101.3A	61.6	35.6	76.3	7	28	10.4	107.9
301 A	TRUMBULL	97.9 B	50.6 F	50.6 F	60.6Q	32.8	75.6	7	27	11.4	104.9
302 B	KNOX 62	100 A	100 A	100 A	62	31.5	75.9	8	27	12	107.9
303 C	OASIS	96.7 B	78.9 F	78.9 F	62.6	29 Q	76.1	7	27.9	11.6	103.2
304 BFA	TWAIN (NA SW78-111)	91.3 C	84.6 E	84.6 E	62.4	31.4	75.5	8	26.1Q	12.4	92.7 *
305 BFC	COKER 9733 (84-33)	97.9 B	84.3 E	84.3 E	62.6	29.5Q	75.4	7	28.5	11.3	104.9
306 IG	DYNASTY (OH 265)	101.1A	81.5 E	81.5 E	61.6	36.3	75.8	7	28.2	11.3	107.2
307 FR	PIONEER 2555 (XW 546)	102.6A	96.2 B	96.2 B	60.6Q	36.6	76.2	7	28.6	10.3	110.5
308 BFH	PACER (HY. EXP. LB-10)	96.6 B	112.9A	96.6 B	61.1*	32.9	75.4	7	28.1	11.3	102.1
309 BEU	LINCLON (NA-76-180)	100 A	86.1 D	86.1 D	60.5Q	33.9	75.5	7	27.9	11	107.9
310 BFI	AR 74107-F11-4	101.7A	73.1 F	73.1 F	61.1*	29.3Q	76.7	7	28	10.7	113.1
311 BGS	IL 83-3298	97. B	72.8 F	72.8 F	62.6	31..	75.7	8	26.6*	12.1	102.4
312 EF	WI X 1336-8	100.5A	115 A	100.5A	60 Q	35.2	76.7	7	28.8	9.9	108.5
313 BDX	IL 81-3737	95.4 B	69.9 F	69.9 F	61.6	27.2Q	76.4	8	27.1	11.2	103.2
314 BGY	KY-83-60	101 A	78 F	78 F	61.2*	28.2Q	77.2	7	28.8	9.7	112.5
315 BGT	IL 82-2986	102.1A	87.9 D	87.9 D	62.1	29.1Q	77.1	7	28	10	112.8
316 IC	OH 265	107.8A	99 B	99 B	61.4*	29.3Q	77.4	7	29.3	9	123.2
317 BFJ	AR 42263-8	101.2A	81.9 E	81.9 E	60.8Q	36	75.1	7	27.5	11.9	108.4
318 BFO	AGC-107	101.5A	83.8 E	83.8 E	61 *	36.6	76.4	8	27.7	11.2	108.3
319 BFP	AGC-108	94.1 C	77 F	77 F	60.8Q	34.3	75.1	8	26.4*	12.4	97.3 *
320 IE	OH 262	93.1 C	102.7A	93.1 C	59.7Q	38.6	75 *	8	27.3	12.4	94.1 *
321 IO	OH 286	97.1 B	89.4 D	89.4 D	59.5Q	38.5	75.5	7	27.8	11.5	101.2
322 BGU	IN. 771454-C1-2-9-69	93.5 C	65.1 F	65.1 F	61.1*	31.6	75.4	8	27.1	12	97.7 *
323 OT	IN. 79404-G1-26-2	99.9 B	88.8 D	88.8 D	62.4	31.8	75.9	7	27.9	10.5	107.1
324 BDZ	IN. 77249-RC1-133-3	91.8 C	85.1 D	85.1 D	60.9*	33.5	75.3	8	26.5*	12.8	93.8 *
325 BGW	MD 75191-80	103.6A	69.1 F	69.1 F	60.3Q	32.1	76.5	7	28.4	9.9	115.5
326 BGJ	MD 73019-26	89.4 D	84.6 E	84.6 E	59.7Q	34.3	74.5*	8	26.4*	12.9	90.5 *
327 BGK	MD 73025-51	102.6A	87.6 D	87.6 D	59 Q	35	77.5	8	28.8	9.8	113.3
328 BGL	MD 73065-03	87.7 D	92.3 C	87.7 D	59 Q	35.8	74.9*	8	25.9Q	12.1	87.4 Q
329 BFV	COKER 86-30	100.1A	90.3 C	90.3 C	61.9	37.8	76.2	7	28.8	10.9	104.2
330 BGW	PS 840061	104.8A	85.1 D	85.1 D	60.7Q	33	77.7	7	29.1	9.8	116.5
331 BFX	COKER 86-35	97 B	86.3 D	86.3 D	61.1*	37.8	76	7	28.5	11.4	99.8
332 BFY	COKER 86-38	103.8A	93.9 C	93.9 C	61.4*	27.1Q	77.2	7	28.6	10.2	117.7
333 BGV	PS 840024	101.2A	57.3 F	57.3 F	63.4	25.3Q	76.6	7	28.9	10	112.4

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Table 3. continued.

1987 CROP

UNIFORM EASTERN RED NURSERY
STANDARD = 302, KNOX 62

STRAIGHT-GRADE FLOUR

LAB NO.	FLOUR PROTEIN %	FLOUR ASH %		MICRO AWRC %		COOKIE DIAMETER CM.	TOP GRAIN
***	10	.34		49.8		17.84	7
***	8.899	.35		51.3		18.35	7
301	11.48Q	.36	*	51.1		16.8 Q	3
302	10	.34		49.8		17.84	7
303	10.22	.39	Q	50.8		17.39*	6
304	9.84	.4	Q	50.5		17.49*	6
305	9.85	.38	Q	48.7		17.4 *	4
306	9.43	.37	*	51.2		17.42*	5
307	8.81	.38	Q	50.7		17.74	6
308	8.95	.39	Q	49.7		18.1	5
309	8.94	.36	*	49.7		17.45*	6
310	9.67	.36	*	50.5		17.2 Q	4
311	9.16	.36	*	52.6	*	17.26Q	4
312	9.01	.41	Q	49.5		18.14	6
313	9.64	.39	Q	50.7		17.13Q	3
314	9.4	.4	Q	50.5		17.3 Q	3
315	9.84	.38	Q	51.2		17.6	4
316	9.8	.36	*	49.1		17.77	6
317	8.58	.33		51.9	*	17.45*	5
318	8.85	.37	*	52.9	*	17.54*	5
319	9.85	.37	*	51.9	*	17.37*	4
320	8.72	.4	Q	50.1		17.87	4
321	9.1	.39	Q	49.7		17.53*	3
322	10.2	.39	Q	50.5		17.04Q	1Q
323	9.15	.38	Q	49.8		17.52*	4
324	9.37	.39	Q	51.8	*	17.53*	4
325	8.38	.36	*	52.1	*	17.15Q	5
326	8.25	.39	Q	51.6	*	17.5 *	5
327	8.66	.4	Q	49.1		17.46*	4
328	9.05	.42	Q	51		17.66	2
329	8.58	.41	Q	53.8	Q	17.74	6
330	8.96	.39	Q	50		17.44*	4
331	7.94	.42	Q	53.1	Q	17.61	4
332	9.8	.36	*	49.4		17.66	3
333	9.31	.39	Q	51.1		16.82Q	4
334	9.39	.42	Q	51.6	*	17.6	4

Table 4. Wheat milling and baking quality data from 1988 Uniform Eastern Soft Red Winter Wheat Nursery samples.

9100202

988 CROP

IIFORM EASTERN RED NURSERY
TANDARD = 302, KNOX 62

WHEAT AND MILLING DATA

LAB NO.	ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	TEST WT.	BREAK FLOUR YIELD	ST. GR. FLOUR YIELD	RED PASSES	FRIABILITY	E.S.I.	MILLABILITY
***	STANDARD - Knox 62	100 A	100 A	100 A	61.8	27.8	76.0	8	26.3	11.7	98.4
***	BENCHMARK	103.1A	103.2A	103.1A	61.6	35.6	76.3	7	28	10.4	98.4
302 2	KNOX 62	100 A	100 A	100 A	61.8	27.8	76.0	6	26.3	11.7	98.4
303 3	OASIS	97 B	89.2 D	89.2 D	61.8	25.8Q	75.7	8	26.3	12.0	95
304 4	IL 82-3298	102.4A	87.3 D	87.3 D	61.8	27.5	76.0	7	26.7	11.3	102.3
305 5	COKER P9733	103.8A	84.3 E	84.3 E	61.8	27.7	75.7	7	27.5	11.5	104.4
306 6	AGC-107	104.4A	96 B	96 B	60.6Q	32.4	76.1	8	26.5	11	103.4
307 7	COKER 86-35	105.2A	94.9 C	94.9 C	60.9*	33.0	76.5	7	27.7	10.4	104
308 8	COKER 86-38	102.6A	88.1 D	88.1 D	61.8	24.0Q	76.1	7	27.0	11.4	105
309 9	OH 286	104.3A	100.2A	100.2A	60.2Q	33.1	75.8	7	27.3	11.4	103.2
310 10	PIONEER 2555	111.7A	98.4 B	98.4 B	60.6Q	34.3	76.6	7	28.8	10.0	113.4
311 11	HANCOCK	108.8A	80.5 E	80.5 E	61.9	29.4	76.7	7	27.7	10.6	110.9
312 12	NA SW84-345	106.1A	89.8 D	89.8 D	60.9*	26.9*	76.5	7	27.3	10.7	109.3
313 13	PACER	97 B	87 D	87 D	61 *	28.4	75.4	7	26.9	11.9	94.2
314 14	771454C1-2-9-6914	98.6 B	87 D	87 D	61.5	28.9	75.4	7	26.5	12.2	95.9
315 15	79404G1-26-2	100.2A	94.8 C	94.8 C	61.5	28.6	75.7	7	26.9	11.2	98.5
316 16	MD 75191-80	108.2A	75.7 F	75.7 F	59.3Q	30.0	76.8	7	27.8	9.73	112.2
317 17	MD 73025-51	105.7A	88.2 D	88.2 D	59.8Q	30.3	76.8	7	27.8	10.2	107.6
318 18	MD 73065-03	92.5 C	84.2 E	84.2 E	60.4Q	30.6	74.6*	8	25.7*	12.1	86.2 *
319 19	AR 26415	88.2 D	68.6 F	68.6 F	61.6	29.0	74.2Q	8	25.8*	13.5*	79.6 Q
320 20	IL 84-2518	96.1 B	79.4 F	79.4 F	61.1*	29.5	75.2	8	26.1	12.3	91.9
321 21	IL 82-2766	102.6A	93 C	93 C	61.9	24.7Q	76.9	7	27.5	10.6	104.3
322 22	AL 840169	103.6A	85.6 D	85.6 D	59.8Q	31.5	76.1	7	27	11.3	103.6
323 23	AL 850046	97.7 B	87.4 D	87.4 D	60.8*	31.4	75.3	7	26.9	12.0	93.5
324 24	2 U 51	95.1 B	70.1 F	70.1 F	61.4	28.5	74.6*	7	26.0	12.6	90.8
325 25	2 C 27	94.1 C	69.8 F	69.8 F	61.2*	24.3Q	75.5	8	25.6Q	12.1	92.1
326 26	WI X1666-1	104.2A	91 C	91 C	60.8*	26.4*	78	7	28.5	9.38	106.8
327 27	COKER 86-22	107.8A	111.8A	107.8A	60.7*	29.3	77.3	7	28.6	9.8	110.6
328 28	MO 9965	99.3 B	86.9 D	86.9 D	62	28.7	75.8	7	27.4	11.9	96.6
329 29	OH 331	97.8 B	74.3 F	74.3 F	60.7*	28.3	76.1	8	27.0	11.6	95.7
330 30	OH 374	99.8 B	71.6 F	71.6 F	60.7*	25.8Q	75.8	7	27.1	11.6	100.4
331 31	OH 394	108.1A	91.1 C	91.1 C	60.5Q	30.2	76.9	7	28.0	9.94	110.6
332 32	79424H1-20-2-74	104.8A	93.2 C	93.2 C	60.3Q	31.0	75.8	7	27.6	10.8	105.2
333 33	KY 83-38	111.3A	95.9 B	95.9 B	61.6	33.0	76.5	7	28.8	10.1	112.7
334 34	MO10501	102.8A	88.2 D	88.2 D	60.8*	30.7	76.1	7	27.6	11.3	101.8

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Table 5. Wheat milling and baking quality data from 1989 Illinois Advanced Nursery samples.

DR. F.L. KOLB
URBANNA, ILLINOIS

STD = #2005, SCOTTY

LAB NO.	ENTRY	MILLING QUALITY SCORE	BAKING QUALITY SCORE	COMBINED QUALITY SCORE	MICRO T.W. KG/HL	SOFT. EQUIV.	FLOUR YIELD	FLOUR PROT.	MICRO AWRC	COOKIE DIAM.	TOP GR.
****	STANDARD ~ Scotty	100.0 A	100.0 A	100.0 A	79.6	46.8	76.6	9.87	54.3	18.14	3
****	BENCHMARK	97.4 B	106.9 A	97.4 B	78.6	61.4	75.1 *	7.87	52.9	18.21	7
2003	1 CALDWELL	101.2 A	88.8 D	88.8 D	79.2	53.6	77.0	8.87	57.2 *	17.83 *	3
2004	2 AUBURN	99.7 B	79.4 F	79.4 F	80.7	48.2	76.0	9.76	54.7	17.08 Q	2
2005	3 SCOTTY	100.0 A	100.0 A	100.0 A	79.6	46.8	76.6	9.87	54.3	18.14	3
2006	4 BECKER	96.9 B	101.4 A	96.9 B	75.8	57.0	76.4	7.67	56.2 *	18.31	3
2007	5 CARDINAL	103.5 A	93.0 C	93.0 C	78.8	51.8	77.7	8.44	56.5 *	17.94	3
2008	6 DYNASTY	98.6 B	91.6 C	91.6 C	79.0	55.5	75.4 *	9.37	56.7 *	17.9	2
2009	7 TYLER	98.4 B	82.8 E	82.8 E	78.2	52.9	75.5	8.04	58.3 Q	17.68 *	3
2010	8 ROLAND	103.2 A	99.3 B	99.3 B	79.1	51.4	76.6	8.69	55.2	18.08	4
2011	9 CLARK	91.3 C	67.5 F	67.5 F	78.6	45.6	74.7 *	9.70	58 Q	17.25 Q	3
2012	10 PIO 2555	107.9 A	98.6 B	98.6 B	78.6	56.2	78.1	9.18	56.1 *	18.16	4
2013	11 PIO 2548	96.5 B	65.7 F	65.7 F	79.1	50.6	74.8 *	9.69	58.7 Q	16.93 Q	2
2014	12 PUR 133-3	95.2 B	92.8 C	92.8 C	79.3	50.2	74.5 *	8.92	56.5 *	17.93	3
2015	13 PUR 94-4	104.8 A	86.9 D	96.9 D	81.4	50.3	76.7	9.42	56.6 *	17.66 *	3
2016	14 ILL 82-3298	102.0 A	67.9 F	67.9 F	82.0	46.3	76.9	9.21	58.8 Q	17.22 Q	3
2017	15 ILL 84-2518-1	92.3 C	77.4 F	77.4 F	78.2	51.5	73.8 Q	9.92	57.7 Q	17.4 Q	2
2018	16 ILL 84-3010	100.1 A	79.2 F	79.2 F	78.4	49.8	76.1	8.52	57.7 Q	17.43 Q	2
2019	17 ILL 84-3511	101.1 A	81.3 E	81.3 E	78.7	52.6	76.1	8.95	57.6 Q	17.52 Q	4
2020	18 ILL 84-4046	93.3 B	86.6 D	86.6 D	80.7	50.3	75.1 *	10.28	56.7 *	17.77 *	3
2021	19 ILL 84-2191-1	107.7 A	94.7 C	94.7 C	80.9	54.2	77.6	8.72	57.7 Q	18.18	3
2022	20 ILL 84-3659-1	99.6 B	69.5 F	69.5 F	78.4	50.6	75.8	8.75	59.1 Q	17.14 Q	3
2023	21 ILL 84-5464	100.5 A	87.1 D	87.1 D	78.6	52.2	76.0	8.89	57.7 Q	17.81 *	3
2024	22 ILL 85-2872	96.3 B	62.0 F	62.0 F	79.8	49.5	74.9 *	9.44	58.1 Q	16.65 Q	2
2025	23 ILL 85-3132-1	93.4 C	76.3 F	76.3 F	78.4	52.1	74.1 Q	9.89	57.6 Q	17.33 Q	2
2026	24 ILL 85-5865	97.3 B	78.3 F	78.3 F	79.1	53.8	75.2 *	9.04	57.5 Q	17.36 Q	1
2027	25 CALDWELL	105.5 A	86.1 D	86.1 D	78.4	54.9	77.4	9.27	58.2 Q	17.83 *	3
2028	26 CARDINAL	106.1 A	93.3 C	93.8 C	79.0	52.2	77.4	8.62	55.8 *	17.89 *	3
2029	27 KNOX 62	94.9 C	66.2 F	66.2 F	80.2	47.3	75.0 *	11.90 Q	57.6 Q	17.15 Q	1
2030	28 ILL 82-3298	103.0 A	81.0 E	81.0 E	81.5	47.8	76.9	8.97	58.9 Q	17.87 *	3
2031	29 ILL 84-3565-1	99.6 B	93.5 C	93.5 C	79.0	49.9	75.8	8.29	56.3 *	17.94	4
2032	30 ILL 77-3457	99.0 B	75.6 F	75.6 F	79.0	54.9	75.5	8.92	58.5 Q	17.36 Q	1

Exhibit E

Statement of the Basis of Applicant's Ownership

The complex cross, generation advance, selection, testing and evaluation, repurification, and multiplication were all performed by the applicant breeder (F. L. Kolb) or his predecessor (C. M. Brown) or technical assistants on the property of the Illinois Agricultural Experiment Station. The variety is intended for use as a public variety in the United States.

The employee's rights, if any, are vested in the University as a condition of employment.